Model REXUA PCBA manual

General

The Model REXUA printed circuit board assembly (PCBA) contains a frequency hopping spread spectrum radio operating in the 900 MHz ISM frequency band plus a DSSS radio operating in the 2.4 GHz ISM band. It also contains circuitry for electricity metering. When the REXUA module is installed in a plastic housing it forms a complete electricity meter. Installations of multiple REXUA meters comprise part of an Advanced Metering Infrastructure (AMI) system that utilizes a proprietary network architecture and protocol devised by Elster Solutions.

Device specifications

Table 1: 900 MHz Radio Specifications

Classification	Frequency Hopping Spread Spectrum	
Maximum Output Power	250 mW	
Frequency Band	902.4 - 927.6 MHz	
Number of Channels	25	
Channel Spacing	400 kHz	
Mode	EA LAN1	EA LAN2
Data Rate	35.5 kbps	142 kbps
20 dB Occupied Bandwidth	250 KHz < BW < 400 KHz	250 KHz < BW < 400 KHz
99% Occupied Bandwidth	250 KHz < BW < 400 KHz	250 KHz < BW < 400 KHz
Max channel dwell time	< 0.4 seconds within a 10 second period	
Classification	Frequency Hopping Spread Spectrum	
Maximum Output Power	1 W	
Frequency Band	902.4 - 927.6 MHz	
Number of Channels	64	
Channel Spacing	400 KHz	
Mode	NGC	
Data Rate	50 kbps, 150 kbps or 200 kbps	
20 dB Occupied Bandwidth	100 KHz < BW < 400 KHz for 50/150/200 kbps data rates	
99% Occupied Bandwidth	100 KHz < BW < 400 KHz for 50/150/200 kbps data rates	
Max channel dwell time	< 0.4 seconds within a 20 second period	
Classification	Frequency Hopping Spread Spectrum	
Maximum Output Power	500 mW	
Frequency Band	902.3 - 927.8 MHz	
Number of Channels	86	
Channel Spacing	300 KHz	
Modulation	FSK	
Data Rate	9.6 kbps, 19.2 kbps, 38.4 kbps	
20 dB Occupied Bandwidth	BW < 100 KHz for 9.6/19.2/38.4 kbps data rates	
99% Occupied Bandwidth	BW < 100 KHz for 9.6/19.2/38.4 kbps data rates	
Max channel dwell time	< 0.4 seconds within a 20 second period	
Classification	Frequency Hopping Spread Spectrum	
Maximum Output Power	500 mW	
Frequency Band	902.3 - 927.8 MHz	
Number of Channels	86	
Channel Spacing	300 KHz	
Modulation	GFSK	

Data Rate	115.2 kbps
20 dB Occupied Bandwidth	250 KHz < BW < 400 KHz for 115.2 kbps data rates
99% Occupied Bandwidth	250 KHz < BW < 400 KHz for 115.2 kbps data rates
Max channel dwell time	< 0.4 seconds within a 10 second period
Classification	Frequency Hopping Spread Spectrum
Maximum Output Power	500 mW
Frequency Band	904.0 - 927.8 MHz
Number of Channels	239
Channel Spacing	100 KHz
Modulation	FSK
Data Rate	9.6 kbps, 19.2 kbps, 38.4 kbps
20 dB Occupied Bandwidth	BW < 100 KHz for 9.6/19.2/38.4 kbps data rates
99% Occupied Bandwidth	BW < 100 KHz for 9.6/19.2/38.4 kbps data rates
Max channel dwell time	< 0.4 seconds within a 20 second period

Table 2: 2.4 GHz Radio Specifications

Classification	Digital Modulation
Maximum Output Power	100 mW
Frequency Band	2405 - 2470 MHz
Number of Channels	14
Channel Spacing	5 MHz
Mode	ZigBee
Data Rate	250 kbps
6 dB Occupied Bandwidth	1.613 MHz
99% Occupied Bandwidth	2.44 MHz

FCC and ISED Canada Compliance

Warning (Part 15.21)

The A3 ALPHA meter equipped with the MNIC option complies with Part 15 of the FCC Rules and with Innovation, Science, and Economic Development (ISED) Canada RSS-210. Warning: Changes or modifications not expressly approved by Elster could void the user's authority to operate the equipment.

FCC & ISED Information

- FCC ID: QZC-MNIC
- IC: 4557A-MNIC

User Information (Part 15.105)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- reorient or relocate the receiving antenna

- increase the separation between the equipment and the receiver
- connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- consult the dealer or an experienced radio/TV technician for help

If you experience trouble with this equipment, please use the Return Material Request (RMR) feature available at the Online Customer Services at www.elsterelectricity.com. Do not attempt to repair this equipment yourself unless you are replacing the entire module.

Compliance Statement (Part 15.19)

This device complies with Part 15 of the FCC Rules and Class B digital apparatus requirements for ICES-003. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation of the device.

ÉNONCÉ DE CONFORMITÉ

Cet appareil est conforme à la Partie 15 des règles de la FCC et aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'utilisation de cet appareil est soumise aux deux conditions suivantes : (1) Cet appareil ne doit pas provoquer d'interférences nocives et (2) cet appareil doit accepter toutes les interférences reçues notamment celles pouvant provoquer un fonctionnement intempestif de l'appareil.

Antenna Compliance

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the Equivalent Isotropic Radiated Power (EIRP) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

MNIC: This radio transmitter has been approved by Industry Canada to operate with the antenna types listed in this document with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

MNIC: Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés dans cette document et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'explotation de l'émetteur.

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

(1) This device may not cause interference; and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'explotation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

RF Radiation Safety Guidelines

The device should be installed in a location where there will be a separation greater than 20 cm (8 inches) from locations occupied by humans.

DIRECTIVES DE SÉCURITÉ DE RADIOFRÉQUENCE

Cet équipement est conforme aux limites d'exposition aux radiations définies par la Commission Fédéral des Communications (FCC) pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à une distance d'au moins 20 cm de séparation de toutes personnes.

Collocation Statement

Collocation of simultaneously-transmitting (co-transmitting) antennas located within 20 cm of each other within a final product is not allowed, except as documented in the FCC application. Users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.